USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002NJ3B

Title: Measurement and Prediction of Hydraulic Properties Needed to Model Groundwater Quality in Southern New Jersey

Project Type: Research

Focus Categories: Hydrology, Sediments, Groundwater

Keywords: hydraulic, groundwater, vadose, sediment, pedotransfer, conductivity, hydrological processes, groundwater contamination, surficial aquifer

Start Date: 03/01/2002

End Date: 03/01/2003

Federal Funds Requested: $30,000

Non-Federal Matching Funds Requested: $63,998

Congressional District: 6th

Principal Investigator:
Daniel Gimenez
Rutgers University

Abstract

Shallow groundwater contamination poses a serious environmental problem; contaminants in surficial aquifers will eventually migrate and contaminate groundwater resources used as public or domestic supply (deeper aquifers). Best management practices designed to reduce the loading of chemicals to the groundwater are being used in an attempt to reduce contamination of the unconfined (shallow) aquifers of southern New Jersey. Unfortunately, the impact of these management practices on the quality of groundwater is typically manifested after several years of being implemented

Processes taking place in the vadose (unsaturated) zone are assessed through simulation models that quantify the effect of various scenarios of climate and management strategies on groundwater quality. These numerical models simulate the fate of contaminants by codifying the basic laws governing water movement and chemical transport through soil.

We propose to develop pedotransfer functions of the major soils and sediments present in southern New Jersey. We will characterize the hydraulic properties of the sediments using samples collected by the U.S. Geological Survey.